WHAT IS CLAIMED IS:

1. A knocking detecting device, comprising:

a signal processing means which converts an analog knock sensor signal into a digital knock sensor signal and filters the digital knock sensor signal digitally every sampling time period;

a calculating means which calculates a value indicative of the number of A/D conversions in a time period required for a crankshaft to rotate a predetermined angle based on the rotational speed of an engine and converts the value into integer *N*;

an integrating means which integrates the filter processed data processed by the signal processing means every *N* during a predetermined period from a process starting time synchronized with a rotation of a crankshaft; and

a knock detecting means which detects the existence of the knocking based on the plural integrated values,

the calculating means deriving *N* before the integrating means starts to process and keeping *N* constant during a processing period of the integrating means.

2. The knocking detecting device according to claim 1, wherein the calculating means measures an interval between reference signals arising when the crankshaft rotates to a fixed angle and multiplies the interval and a constant number together, the constant number being calculated based on the fixed angle, the predetermined angle and the sampling period.

3. The knocking detecting device according to claim 1, wherein

the calculating means fixes the integer *N* when the number of rotational speed is under a predetermined value or over a predetermined value.

4. The knocking detecting device according to claim 1, wherein the calculating means integrates the filter processed data every *N* until the number of integration reaches *a*, *a* being a natural number larger than 1,

the knock detecting means determines whether the knocking arises or not,

the calculating means rounds the value whereby the integer *N* is derived, and

the natural number *a* is increased when the calculating means rounds down the decimal place of the value to derive *N*.

5. The knocking detecting device according to claim 1, wherein a process starting time of the integrating means is established as a time in which the crankshaft rotates to an angle form a reference angle,

the integrating means integrates the filter processed data every *N* until the number of integration reaches two or more, and

the detecting means detects the acceleration or deceleration of an engine based on a rotational speed of the engine until the rotational position of the crankshaft reaches the reference angle and based on a rotational speed of the engine during a period until the integration means finishes the calculation of the integrated value from a time in which the rotational position of the crankshaft in the reference angle, the detecting means is provided with an

integrated value selecting means which selects a series of integrated values according to the acceleration or deceleration of the engine, the integrated value selecting means determining an existence of the knocking.

6. The knocking detecting device according to claim 5, wherein the integrated value selecting means selects a constant number of the integrated value as an actual number of the integrated value to be used for determining knocking.

7. The knocking detecting device according to claim 1, wherein a process starting time of the integrating means is established as a time in which the crankshaft rotates to an angle form a reference angle,

the integrating means integrates the filter processed data every *N* until the number of integration reaches two or more, and

the detecting means detects the acceleration or deceleration of an engine based on a rotational speed of the engine until the rotational position of the crankshaft reaches the reference angle and based on a rotational speed of the engine during a period until the integration means finishes the calculation of the integrated value from a time in which the rotational position of the crankshaft in the reference angle,

the detecting means determining the knocking based on *b* pieces of the integrated numbers which are integrated from a first integrated numbers every *m* when the acceleration or deceleration of the engine is within a predetermined percent,

the detecting means determining the knocking based on *b* pieces of the integrated numbers which are integrated from the first integrated numbers every fixed number larger than *m*,

the detecting means determining the knocking based on *b* pieces of the integrated numbers which are integrated from the first integrated numbers every fixed number smaller than *m*, and

m and *b* being natural numbers more than two.